NPS Form 10-900
(7-81)

OMB NO. 1024-0018
EXP. 12/31/84

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

For NPS use only
received
date entered

1. Name

historic Pottawatomie Creek Bridge

and/or common Pottawatomie Creek Bridge

2. Location

street & number 1/2 mile South of Osawatomie on FAS 1604 N/A not for publication

city, town Osawatomie X vicinity of ~~congressional district~~

state Kansas code 20 county Miami code 121

3. Classification

Category	Ownership	Status	Present Use	
___ district	X public	X occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
X structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	X yes: unrestricted	___ industrial	X transportation
	X N/A	___ no	___ military	___ other:

4. Owner of Property

name Miami County

street & number Courthouse

city, town Paola ~~N/A~~ vicinity of state Kansas

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds

street & number Miami County Courthouse

city, town Paola state Kansas

6. Representation in Existing Surveys

title Inventory of Marsh arch Bridges - Kansas Department of Transportation has this property been determined eligible? ___ yes X no

date 1980 ___ federal X state ___ county ___ local

depository for survey records Kansas State Historical Society

city, town Topeka state Kansas

7. Description

Condition		Check one	Check one
___ excellent	___ deteriorated	___ unaltered	X original site
X good	___ ruins	X altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Pottawatomie Creek bridge is situated 1/2 mile south of Osawatomie, Kansas on FAS 1604. The 370 foot long structure is composed of a 120 foot "rainbow arch" (or Marsh arch"), two 80 foot rainbow arches, and two 40 foot concrete deck approach spans. The two smaller arches show evidence of the removal of their overhead thru struts. Also, the roadway has been resurfaced periodically but this has not significantly compromised the bridge's integrity. Marsh's plans allowed for whatever filling material, between the bridge deck curbs, that locality might desire. Built at a total cost of $49,000 this bridge contains 1500 yards of concrete and 313,000 pounds of steel.

The best description of the rainbow arch spans is contained in James Marsh's 1911 patent application. The bridge consists of ". . . two abutments (which could be piers), a pair of arches disposed between and springing from the abutments, the floor carried by and between the arches and reaching from one abutment to the other where it alines with the parapets or rails along opposite sides of the floor line." The original patents called for slideable wear plates to be moulded into the concrete where the bridge floor came into contact with the beams and abutments. This is of importance as one of the main benefits of this design was to allow for the expansion and contraction of the reinforced concrete bridge under varying conditions of temperature and moisture.

The Pottawatomie Creek bridge is 24 feet wide and 27 feet tall at its highest arch. The deepest pier rests on a bed of soft shale approximately 57 feet below grade. The low water level lies approximately 37.5 feet below grade. The structure required 218 days for its building and was reported by the Osawatomie Graphic on June 30, 1932 to have a capacity of 15 heavily loaded trucks, driving in opposite directions. The bridge was opened to traffic on June 24, 1932.

There were two basic rainbow arch designs, fixed and tied. The original patent application describes the fixed type in which case the arch flowed below the bridge deck and was "fixed" directly into the abutment. This massive abutment (or pier) resisted both the horizontal and the vertical thrust of the arch. In a tied design such as that of the Pottawatomie Creek bridge, the arch did not flow below the deck line and was not fixed directly into the abutment. It was secured atop the abutment or pier by the use of steel rocker or expansion rocker bearings. Vertical thrust was resisted by the pier and bearing, while horizontal thrust was resisted by the addition of a lower chord.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion	
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science	
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture	
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian	
___ 1700–1799	___ art	X engineering	___ music	___ theater	
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	X transportation	
X 1900–	___ communications	___ industry	___ politics/government	___ other (specify)	
		___ invention			

Specific dates 1932 **Builder/Architect** James Barney Marsh, Engineer

Statement of Significance (in one paragraph)

The Pottawatomie Creek "rainbow arch" (or "Marsh arch") bridge south of Osawatomie retains its integrity of location, design, setting, materials, feeling, and association. It is associated with the life of James B. Marsh, pioneer in steel and concrete bridge construction. It embodies the distinctive characteristics of a type and method of construction that is no longer being used and, as such, may yield information important to the history of engineering. Of the 72 known rainbow arch bridges in Kansas only 8 possess three arches.

James Barney Marsh was born in 1856 at North Lake, Wisconsin. He went to Iowa at the age of 18 to enter preparatory school at Fredericksburg. Marsh graduated in 1882 from Iowa State College of Agriculture and Mechnaical Arts in Ames, with a B.M.E. degree. In March of 1883 he began his professional career in the Des Moines office of the King Bridge Company of Cleveland, Ohio. With King, Marsh was involved in the design, sales and actual erection of metal bridges. While he continued to work with the King company, he also became head of the Northern Agency for the Kansas City Bridge and Iron Company. In this capacity, he both designed and superintended the actual construction work done by the company. By March of 1889, Marsh had become general western agent and contracting engineer for the King Bridge Company and was placed in charge of the general western office in Des Moines. In the spring of 1896, he formed his own company, the Marsh Bridge Company, and was its sole proprietor. In private practice as a contracting engineer, Marsh was able to more fully develop his own designs. He also constructed the designs he developed, usually using steel as a medium. At the turn of the century, Marsh initiated the use of both concrete and steel in his bridge design. In April of 1904, the Marsh Bridge Company was incorporated with Marsh as president and chief engineer. In 1909, the company was reorganized as the Marsh Engineering Company.

It was not until the introduction of the "rainbow arch" by Marsh, that Kansas made widespread use of reinforced concrete spans for major stream crossings. Marsh canvassed the midwest, selling his arches in direct competition with the steel trusses at that time.

The Osawatomie Graphic reported on June 4, 1931 that the road bonds for No. 7 south had been sold to the Miami County banks and that work would soon begin on paving the road. This project included the building of a large bridge 1/2 mile south of town. The July 10, 1931 edition of the Ottawa Herald announced that 20 contractors entered bids for its construction. State Highway Commission engineers at division headquarters eventually awarded the contract to the J. S. Vance and Son Construction Company of Parsons, Kansas. On July 31, 1931 the Miami Republican predicted that the mile of roadwork including the bridge would cost over $114,000 making it the most expensive mile of roadwork in the county. The bridge itself was to cost $66,751.56. Of it the paper wrote, "This is the most costly and will be the most pretentious bridge in the county."

Form No 10-300a
(Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

Significance, Item 8

The Osawatomie Graphic-News wrote on June 9, 1932 that the Pottawatomie Creek Bridge was nearly completed. The approaches had been paved and the road would be open for traffic in a few days. The June 30, 1932 edition reported the June 24 grand opening of the new road and bridge complete with parade and balloon ascension. The parade began at 2:00 at Fourth street and ended at the bridge at 2:30 with speeches by Mr. Walker, assistant engineer, Mr. Pendtleton, maintenance supervisor for the district's State Highway system, and Adjutant General Mclean, who represented the governor. General Mclean then cut the ribbon officially opening the bridge to traffic. The American Legion Juvenile band played and at 4:30 Mr. Hardie Dillinger made a successful balloon ascension and parachute jump landing just north of the Marais des Cygne.

Item 9

BIBLIOGRAPHY

"Court House News," Osawatomie Graphic-News, May 14, 1931, p 8 c 4
"County Seat News," Osawatomie Graphic-News, June 4, 1931 p 1 c 5
"Cooperation Brings Results," Osawatomie Graphic-News, June 18, 1931 p 1 c 1
"Cook Low Bidder on New K-33 Slab," Ottawa Herald, July 10, 1931 p 1 c 3
"This Mile of Road is Very Expensive," Miami Republican, July 31, 1931 p 1 c 4
"Court House News," Osawatomie Graphic-News, September 3, 1931 p 1 c 6
"Items Gathered at Court House," Miami Republican, September 25, 1931, p 1 c 1
"New Bridge Almost Completed," Osawatomie Graphic-News, June 9, 1932, p 1 c 1
"Big Crowd Here for Road Opening Day," Osawatomie Graphic-News, June 30, 1932, p 1 c 1
Nichols, C. D., Comp. Directory of Graduates of Division of Engineering, Iowa State College of Agriculture and Mechanical Arts, Ames, Iowa.
The Alumnus of Iowa State. Alumni Association of Iowa State College, Ames. Volume XXXII, #1, July 1936
Marsh, James B., Specification of Letters Patent Number 1,035,026, patented August 6, 1912, United States Patent Office, Washington, D.C.
Plans and Files, Design Department, Kansas Department of Transportation, Topeka, Kansas Microfilm Roll #27, frame 517+

9. Major Bibliographical References

See Continuation Sheet, Item Number 9.

10. Geographical Data

Acreage of nominated property .5

Quadrangle name Osawatomie Quadrangle scale 1:24,000

UMT References

	Zone	Easting	Northing
A	15	329880	4261260
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

The structure being nominated is 370 feet long and 24 feet wide. That property on and over which the bridge is built, ½ mile south of Osawatomie, Kansas, S14, T18S, R22E. Includes bridge superstructure plus supporting piers and abutments.

List all states and counties for properties overlapping state or county boundaries

state	N/A	code	county	code
state		code	county	code

11. Form Prepared By

name/title Larry Jochims, Research Historian and Michael Snell

organization Kansas State Historical Society date June 10, 1982

street & number 10th & Jackson Streets telephone (913)296-2973

city or town Topeka state Kansas

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national x state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title date

For NPS use only

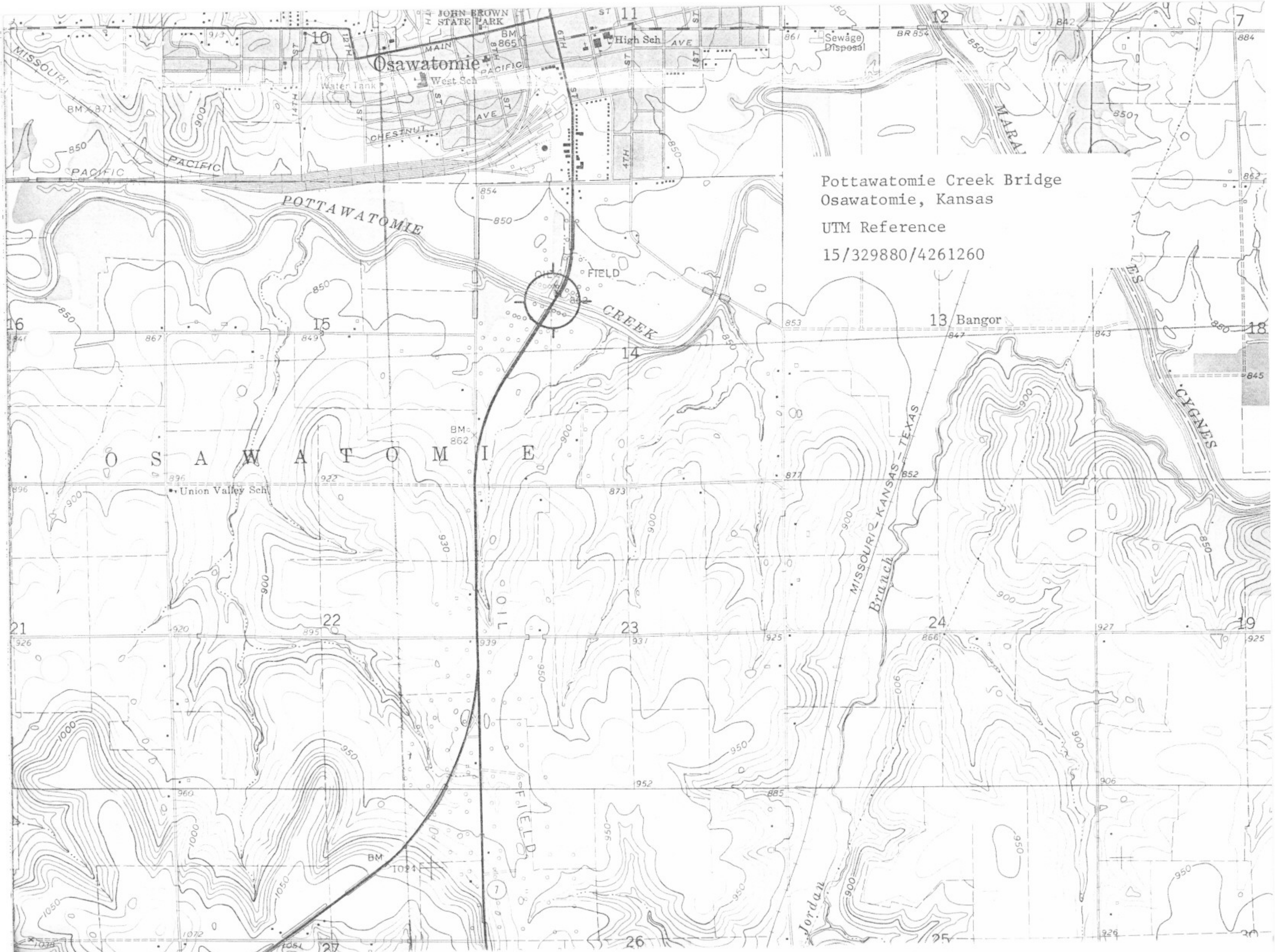
I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: date

Chief of Registration



Pottawatomie Creek Bridge
Osawatomie, Kansas

UTM Reference

15/329880/4261260